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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/594,393	06/15/2000	Georg-Erwin Arndt	P00.0954	1384

7590 10/08/2003

Schiff Hardin & Waite
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606-6473

EXAMINER

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
09/594,393	ARNDT ET AL.	
Examiner	Art Unit	
Devona E. Faulk	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2000.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6 is/are rejected.
- 7) ☒ Claim(s) 2-5 and 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some * c) ☐ None of:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☒ Certified copies of the priority documents have been received in Application No. 09/594,393.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 2-5, and 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
2. Claim 1 is objected to because of the following informalities:
Regarding claim 1, the third element of the claim beginning with “providing a measuring...”, it is unclear as to what is supplying said electrical signals to said external measuring and evaluation unit. Please clarify. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sigwanz et al. (U.S. Patent 6,539,096) in view of Ishige et al. (U.S. Patent 5,835,610) in further view of Sasada (U.S. Patent 5,796,820).

Regarding claim 1, Sigwanz discloses a method for producing a variable directional microphone characteristic and digital hearing aid operating according to the method comprising microphones (1a and 1b) and interpolation filters (4a, 4b and 4c) which reads on “a plurality of

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microphones with filters respectively connected downstream therefrom, said filters being parameterizable"; a signal processing unit (8) which reads on "signal processing stage"; and an earphone, which reads on "earphone". The interpolation filters preferably operate as a low-pass filter but can be any type filter. An interpolation filter is used to compute outputs at times in between the sample points. It is well known in the art that hearing aids are worn the user, and that hearing aids have microphones to receive acoustic signals and convert that acoustic signal to an electrical signal. Although Sigwanz teaches on the above elements, he fails to teach of a measuring and evaluation unit external to the hearing aid and supplying electric signals to the external measuring and evaluation unit. However, the concept of an external measuring and evaluation unit or controller was well known in the art at the time of filing as taught by Ishige. Ishige discloses a hearing aid device with an external device (3), the external device comprising a controller and a hearing aid processor, which reads on "a measuring and evaluation unit external to said hearing aid". Although Ishige discloses the above elements, he fails to teach on an external unit calculating filter parameters from said electrical signals, and supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic. However, the concept of calculating filter parameters from said electrical signals, and supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic was well known in the art at the time of filing as taught by Sasada. Sasada discloses an echo canceller comprising a coefficient controller (102) composed of an adaptive processor (201), a correction data memory

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(202) and a received data memory (203). Based on the transmitting output signal and a series of received signals from the FIR filter, the adaptive processor (201) performs coefficient correction calculation to update a set of coefficients (column 3, lines 58-67). The coefficient controller receives and sends data back to the filter (See Figure 1). Replacing the Ishige's controller with Sasada's controller, reading Sigwanz's interpolation filters as FIR filters, and connecting the filters to the controller as shown by Sasada reads on "in said measuring and evaluation unit, calculating filter parameters from said electrical signals", and "supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic". Sigwanz's hearing aid is a directional one and so it is obvious that one would set the amplitude and phase response to optimize the directional characteristic. It would have been obvious to combine Sigwanz's hearing aid, Ishige's external apparatus and Sasada's controller for the benefit of a hearing aid device that would allow the user to better optimize the device to his or her personal parameters.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sigwanz et al. (U.S. Patent 6,539,096) in view of Ishige et al. (U.S. Patent 5,835,610) in further view of Sasada (U.S. Patent 5,796,820).

Regarding claim 1, Sigwanz discloses a method for producing a variable directional microphone characteristic and digital hearing aid operating according to the method comprising microphones (1a and 1b) and interpolation filters (4a, 4b and 4c) which reads on "a plurality of microphones with filters respectively connected downstream therefrom, said filters being parameterizable"; a signal processing unit (8) which reads on "a signal processing stage"; and an

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earphone, which reads on "earphone". The interpolation filters preferably operate as a low-pass filter but can be any type filter. An interpolation filter is used to compute outputs at times in between the sample points. It is well known in the art that hearing aids are worn the user, and that hearing aids have microphones to receive acoustic signals and convert that acoustic signal to an electrical signal. Although Sigwanz teaches on the above elements, he fails to teach of a measuring and evaluation unit external to the hearing aid and supplying electric signals to the external measuring and evaluation unit. However, the concept of an external measuring and evaluation unit or controller was well known in the art at the time of filing as taught by Ishige. Ishige discloses a hearing aid device with an external device (3), the external device comprising a controller and a hearing aid processor, which reads on "a measuring and evaluation unit external from said hearing aid". Although Ishige discloses the above elements, he fails to teach on an external unit calculating filter parameters from said electrical signals, and supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic. However, the concept of calculating filter parameters from said electrical signals, and supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic was well known in the art at the time of filing as taught by Sasada. Sasada discloses an echo canceller comprising a coefficient controller (102) composed of an adaptive processor (201), a correction data memory (202) and a received data memory (203). Based on the transmitting output signal and a series of received signals from the FIR filter, the adaptive processor (201)

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performs coefficient correction calculation to update a set of coefficients (column 3, lines 58-67). Replacing the Ishige's controller with Sasada's controller, reading Sigwanz's interpolation filters as FIR filters and connecting the filters to the controller as shown by Sasada reads on "in said measuring and evaluation unit, calculating filter parameters from said electrical signals", and "supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic". Sigwanz's hearing aid is a directional one and so it is obvious that one would set the amplitude and phase response to optimize the directional characteristic. It would have been obvious to combine Sigwanz's hearing aid, Ishige's external apparatus and Sasada's controller for the benefit of a hearing aid device that can be optimized for better functionality.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 703-305-4359. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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MINSUN OH HARVEY
PRIMARY EXAMINER